Master Thesis

Managing AI Disruption at VU: Strategies and Theoretical Insights on Academic Integrity

by

Christian Loyd Prieto Abear, Huseyin Emre Olmez

(2397245, 2717688)

First supervisor:	Anna Bon
Daily supervisor:	Anna Bon
Second reader:	Hans Akkermans

July 1, 2024

Submitted in partial fulfillment of the requirements for the VU degree of Master of Science in Information Sciences

Managing AI Disruption at VU: Strategies and Theoretical Insights on Academic Integrity

Christian Loyd Prieto Abear, Huseyin Emre Olmez
Vrije Universiteit Amsterdam
Amsterdam, The Netherlands
{c.l.abear|h.e.olmez}@student.vu.nl

ABSTRACT

Artificial Intelligence (AI) is posing challenges to traditional educational practices, revolutionizing teaching and learning. Despite the potential of AI, universities have yet to fully understand its implications for education. This research aims to assess the opportunities and challenges AI presents in education through qualitative research involving interviews, and contributes to the ongoing discourse on AI in education, viewing AI as the latest in a series of technological disruptions that transform educational practices. This research contributes to the broader discourse on AI in education, providing insights and strategies to navigate the role of AI while maintaining educational integrity and societal values. The research reveals that AI tools can enhance learning efficiency but also introduce challenges such as dependency, reliability issues, privacy concerns, and potential academic misuse. Effective integration requires educational training, clear guidelines, and curriculum adaptation to ensure ethical use. The study provides a framework with recommendations to address these challenges, promoting equitable access and ethical AI practices in education.

1 INTRODUCTION

With every new invention comes a new set of problems. The evolution of technology has consistently reshaped various sectors of society, with education being no exception. Each technological advancement has brought about significant changes in educational practices. As we stand on the brink of yet another technological revolution, artificial intelligence (AI), it becomes important to understand how this new wave of innovation will impact the educational landscape. This surge in AI adoption aligns with global movements towards digitized educational practices, as evidenced by the growing body of literature advocating for the integration of advanced computational tools in education (Zhang & Aslan, 2021).

However, the introduction of AI also presents numerous challenges, including concerns about data privacy, the need for changes in curricula, and the potential for widening the digital divide (Rodrigues, 2020). To navigate these challenges and harness the potential of AI, educational institutions must adopt a strategic and resilient approach.

To do this, the perceptions of students and faculty at the Vrije Universiteit (VU) play a important role in the integration of AI technologies. While the VU is actively engaging with AI through initiatives like the AI Maturity in Education Scan (AIMES), there remains a question of how well these efforts are recognized and utilized by the university community (Vrije Universiteit Amsterdam, 2023). This raises pertinent questions: How is the VU navigating the integration of AI in its educational practices? What are the specific benefits and challenges perceived by its stakeholders? And how do these perceptions influence the adoption and integration of AI technologies?

To address these questions, this study aims not only to explore the current use and impact of AI at the VU but also to develop a theoretical framework and provide recommendations for the VU. This framework will guide the university in effectively managing the increasing use of AI among students, ensuring that AI technologies are integrated in a way that enhances educational quality while maintaining ethical standards and academic integrity.

The purpose of this study is to answer the following main question: To what extent can Vrije Universiteit maintain academic integrity amidst the disruption caused by AI?.

To answer this main question, the following sub-questions were formed:

1. How is AI being integrated into educational practices at the VU, and what are the perceived benefits and challenges?
2. How do AI technologies affect academic integrity and data privacy within the faculty?
3. What are the students & faculty members perceptions towards AI, and how do these perceptions influence the adoption and integration of AI technologies?
4. What theoretical framework can be developed to guide the VU in the ethical and effective integration of AI in education?

A primary motivation for this research is to understand the potential of AI. Despite all the scientific research examining the impact of AI in education, there remain unresolved issues, particularly concerning the challenges of AI by students and the uncertainty among universities about how to manage the growth of AI technologies in educational settings.

Another aspect of this study involves exploring stakeholder perceptions. The success of technological adoption hinges on the acceptance and perceptions of its users, including both students and faculty (Huang et al., 2023). Understanding their attitudes toward AI in education is essential for identifying potential barriers and facilitators to its adoption. The impact of AI on accessibility and equity in education is a pressing concern (Xia et al., 2023). This research aims to gain insights into the resistance or enthusiasm towards AI applications within academic settings, providing a clearer picture of how AI is perceived across different perspectives. Also

to address the gaps by developing a framework and providing practical recommendations tailored for the VU.

The findings from this study are expected to influence educational policy and pedagogical practices by providing evidence-based analyses of how AI impacts learning outcomes and teaching methodologies. This contribution is important for developing policies that support effective and ethical AI use, ensuring that educational changes align with pedagogical goals and societal values (Rodway & Schepman, 2023; Huang et al., 2023). This research will offer a framework and practical recommendations to guide the VU in leveraging AI tools to enhance educational quality and maintain academic integrity.

2 BACKGROUND

2.1 Disruptive technologies: A Journey from Calculators to AI in Education

The integration of technology into education has historically led to significant transformations, shaping the way teaching and learning processes are conducted. To understand the current and future impact of AI on education, it is essential to examine previous major technological advancements. By analyzing how such inventions have influenced educational practices and the challenges they introduced, we can derive valuable lessons that inform the integration of AI in today's educational landscape.

The introduction of calculators in the 1970s marked a shift in educational practices, particularly in mathematics and science education. Before calculators, students relied solely on manual calculations, which were time-consuming and prone to errors. Calculators allowed for faster and more accurate computations, enabling students and educators to focus on problem-solving and higher-order thinking skills. However, the initial resistance came from educators who feared that calculators would diminish students' basic arithmetic skills. There was concern that reliance on calculators might impede students' understanding of fundamental mathematical concepts (Banks, 2011). Over time, however, curricula were adapted to integrate calculators effectively, ensuring that students still developed essential skills. Today, calculators are an integral part of education, with standardized guidelines ensuring they are used as tools for enhancing learning rather than crutches that replace fundamental skills.

Following the advent of calculators, the late 20th century saw the arrival of personal computers, which ushered in a new era in education. Computers provided students and teachers with powerful tools for learning, research, and communication. The use of educational software and programs enhanced interactive learning, allowing students to engage with simulations, tutorials, and multimedia presentations (Antonietti & Colombo, 2008). Despite these advantages, the introduction of computers faced hurdles such as the need for substantial teacher training, and the challenge of integrating computers into existing curricula. Many schools also struggled with providing equitable access to technology for all students (Moonen, 1989). These challenges were gradually addressed through teacher training programs and initiatives to ensure broader access to technology. Today, computers are ubiquitous in classrooms and their integration has significantly enhanced educational outcomes.

Building on the capabilities of computers, the widespread availability of the internet in the 1990s and early 2000s revolutionized education by providing unprecedented access to information and resources. The internet connected classrooms to a vast array of knowledge, enabling students to conduct research, collaborate with peers globally, and access online courses and educational content (Allison et al., 2012). However, the internet introduced issues related to digital literacy, ensuring students and teachers could effectively navigate and evaluate the vast amounts of information available online. Additionally, there were concerns about students' exposure to inappropriate content and the digital divide, where unequal access to the internet exacerbated educational inequalities. Over time, schools implemented digital literacy programs, internet safety protocols, and initiatives to bridge the digital divide. The internet is now a fundamental resource in education, facilitating a more connected and informed learning environment.

The integration of mobile devices in the early 21st century further transformed the educational landscape. Smartphones and tablets made learning more flexible and accessible, allowing students to access educational materials anytime and anywhere. Mobile apps and platforms facilitated interactive and personalized learning experiences. Nonetheless, these advancements brought challenges such as distractions from non-educational content, the need for schools to develop mobile-friendly learning resources, and ensuring all students had access to these devices (Cordova, 2018; Admodisastro et al., 2021). Schools have since developed strategies to mitigate these issues, such as implementing usage policies. Mobile devices are now widely accepted as valuable educational tools that enhance learning accessibility and engagement.

Today, the emergence of artificial intelligence represents the latest transformative technology in education. Generative AI has the potential to revolutionize personalized learning by assisting students with writing and learning, offering tailored educational experiences that meet individual student needs.(Lim et al., 2023; Kotni et al., 2023).

However, the integration of AI into education presents several challenges. There are significant concerns about data privacy, as AI systems often require large amounts of personal data to function effectively. Ensuring equity in access to AI tools and resources is another major challenge. Besides that, educators need to develop new assessment methods to maintain academic integrity in an era where AI can easily generate essays and solve complex problems. Students themselves have increasingly turned to generative AI tools like ChatGPT for assistance with their studies, utilizing these technologies for a variety of tasks ranging from drafting essays to solving complex problems (Chan & Hu, 2023).

As with previous technological disruptions, the introduction of AI in education will require us to navigate and adapt to its challenges. AI, like calculators, personal computers, the internet, and mobile

devices before it, represents another step in the ongoing evolution of educational technology. History has shown that these advancements are inevitable and unstoppable. Each new technology brings initial challenges and resistance, but ultimately, society finds ways to integrate and harness these tools to enhance educational practices. AI will be no different. By learning from past experiences, we can better prepare for and embrace the changes AI will bring, ensuring it serves as a beneficial addition to the educational landscape.

2.2 Riding the Waves of Technological Change: Applying the ACoR Model to AI in Education

AI into education represents a technological disruption, echoing past transformations like the introduction of calculators, personal computers, and the internet. To navigate this disruption effectively, the Adaptive Cycle of Resilience (ACoR) provides a robust framework. The ACoR model elucidates how organizations, including educational institutions, can manage and thrive through these dynamic changes (Takács & Abcouwer, 2020).

The Adaptive Cycle of Resilience (ACoR) (Figure 1) is a framework that explains how organizations respond to disruptions through four phases: Equilibrium, Challenge, New Combinations, and Operationalization. In the Equilibrium phase, organizations operate under stable conditions with established practices. When a disruption occurs, they enter the Challenge phase, recognizing that existing methods are insufficient. This leads to the New Combinations phase, where creative and innovative solutions are developed. Finally, in the Operationalization phase, these new solutions are implemented and integrated into the organization, leading to a new state of equilibrium. This cyclical process highlights the importance of resilience, adaptability, and continuous learning in successfully navigating change (Takács & Abcouwer, 2020).

The reason for introducing the ACoR framework is to provide a clear understanding of our current position in the cycle of change brought about by AI in education and to guide us on where we need to go. This will let us see the bigger picture of the whole situation.

AI's integration into education demands a strategic approach to manage the initial disruption and ensure long-term sustainability and effectiveness. The ACoR model is particularly relevant because it emphasizes resilience, adaptability, and continuous learning, key components needed to handle the rapid advancements and challenges associated with AI. This model helps us understand the stages educational institutions must go through to effectively incorporate AI, ensuring that this technology enhances rather than disrupts educational practices.

As an example, the introduction of calculators in the 1970s marked a significant shift in educational practices. Initially, there was resistance from educators who feared that calculators might undermine students' fundamental arithmetic skills. This period represented a state of Equilibrium, where traditional methods were the norm. However, as the complexity of educational needs increased, the system reached a Challenge state (Ecological Resilience), necessitating new approaches to integrate calculators effectively into the curriculum. Through creativity and innovation, new teaching methods were developed, this is the New Combinations state (Social Resilience), leading to a state of Operationalization (Strategic Resilience) where calculators became an integral part of education.

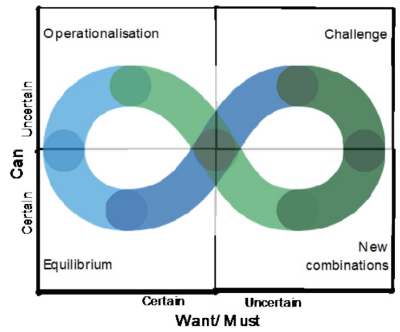

Figure 1: The Adaptive Cycle of Resilience (ACoR) Model (Takács & Abcouwer, 2020)

Just like past disruptions, we are currently again transitioning from the Equilibrium phase to the Challenge phase. In the Equilibrium phase, traditional teaching methods and technologies were stable and widely accepted. However, the introduction of AI has disrupted this equilibrium, creating uncertainty and resistance among educators and administrators. These stakeholders have concerns regarding the potential for AI to undermine academic integrity and data privacy and therefore disrupts the existing balance. This phase is marked by the recognition that traditional methods are no longer sufficient to meet new demands. Educational institutions must now confront the disruption, which often leads to initial resistance and uncertainty.

To move from the Challenge phase to the New Combinations phase, institutions need to foster a culture of creativity and innovation (Takács & Abcouwer, 2020). This involves for example developing AI literacy by training educators and students to understand and effectively use AI tools. It also requires creating supportive policies that address ethical use. Promoting collaborative efforts between educational institutions, technology providers, and policymakers helps for developing AI solutions tailored to educational needs. Investing in research and development supports exploring new AI applications in education and continuously refining existing tools.

In the New Combinations phase, educational institutions identify and develop new solutions and strategies (Takács & Abcouwer, 2020). This phase is characterized by creativity and the generation of multiple potential approaches to address the challenges posed by AI integration. Schools and universities experiment with various AI tools and applications, assessing their effectiveness and feasibility in educational settings.

Once new solutions and strategies are identified, institutions move into the Operationalization phase. Here, the focus shifts to implementing these new methods and tools effectively (Takács &

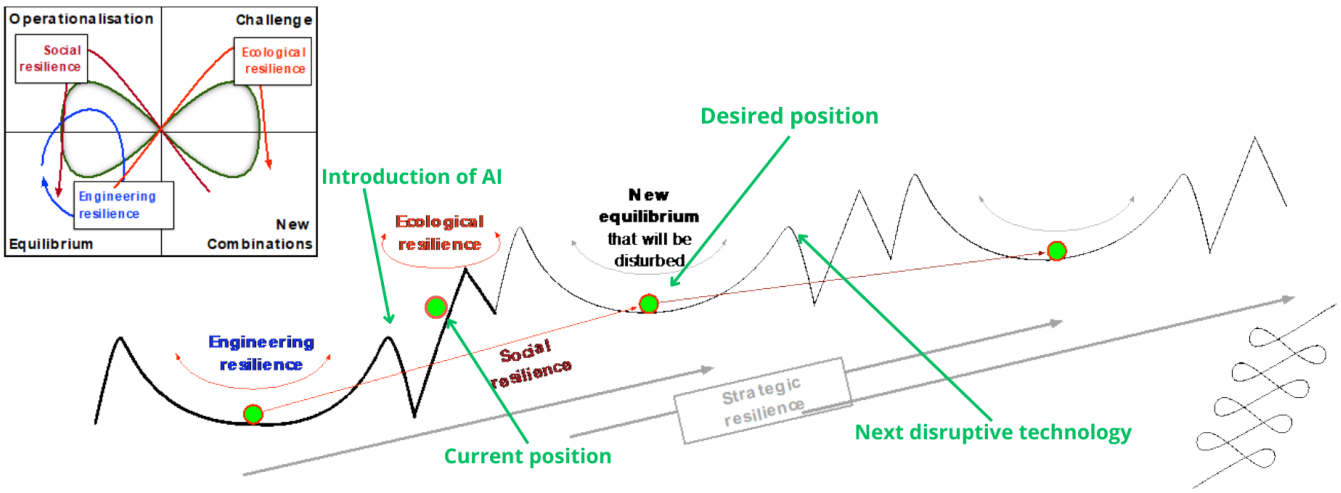

Figure 2: The Adaptive Cycle of Resilience (ACoR) Model with Modifications (Adapted from Takács Abcouwer, 2020). Additional elements added by the author.

Abcouwer, 2020). Educational institutions initiate pilot programs to test AI applications in real educational settings, gather feedback, and make necessary adjustments. Scaling successful practices across more classrooms and schools ensures widespread adoption. Establishing mechanisms for ongoing assessment and improvement of AI tools and their impact on teaching and learning is essential. The end goal is to reach a new state of Equilibrium where AI is seamlessly integrated into the educational landscape, enhancing learning outcomes and operational efficiency. This new equilibrium is characterized by resilient educational systems that are adaptable, flexible, and capable of leveraging AI to meet diverse educational needs.

2.3 The Impact of AI on Data Privacy

Despite the benefits, the widespread use of AI among students brings concerning data privacy. The effectiveness of AI systems largely depends on the availability of large amounts of data, often including sensitive personal information. This dependency raises concerns about how data is collected, stored, and used (Harry, 2023; Eden et al., 2024).

One of the primary data privacy concerns is the risk of data breaches and unauthorized access. As students use AI tools that collect and store vast amounts of their personal data, universities and service providers become attractive targets for cyberattacks. Ensuring robust cybersecurity measures is essential to protect this data from malicious actors (Irfan et al., 2023). It is important for universities to balance the benefits of AI with respect for students' privacy rights (Zhang & Aslan, 2021).

2.4 Impact of AI on the perceptions of students

Various studies have explored the perceptions of students about A.I in education, identifying both positive impacts and challenges (Zhai et al., 2021; Lim et al., 2023; Rodway & Schepman, 2023). Generative AI, such as ChatGPT, offers benefits for students by facilitating personalized learning experiences. These AI-driven platforms can adapt educational content to meet the individual needs of students, providing feedback and support. This personalized approach enhances students' understanding of complex concepts and caters to diverse learning paces and styles (Zhai et al., 2021). ChatGPT is increasingly used by students for a variety of academic purposes, including homework assignments, solving complex problems, and preparing for exams. The ability to engage with AI in a conversational manner allows students to explore subjects more deeply and get their questions answered quickly without the delay of waiting for instructor feedback (Lim et al., 2023). These tools not only reduce the administrative burdens on educators, allowing them to focus more on direct teaching and student engagement, but they also create a more interactive and supportive learning environment. This enhances the overall educational experience for students (Rodway & Schepman, 2023).

Students' perceptions of AI in education are generally positive, particularly due to the enhanced access to personalized learning support and the ability to tailor educational content to their own pace and style. Students appreciate the immediate feedback and the ability to understand more complex topics with the help of AI. However, there are also concerns about the potential dependency on these technologies and the need to ensure academic integrity. Moreover, generative AI, such as ChatGPT, can democratize access to educational resources, offering equitable learning opportunities, especially for students from non-English speaking backgrounds or those facing socio-economic challenges. This ability to continuously improve content with human prompts and provide rapid responses ensures a more inclusive educational environment (Lim et al., 2023).

Despite the advantages, the integration of AI in education also presents several challenges that can affect students' perceptions.

One concern is maintaining academic integrity. As AI tools become more sophisticated, the risk of misuse by students to gain unfair advantages increases. This issue necessitates clear policies and guidelines to ensure the responsible and ethical use of AI in academic settings (Zhai et al., 2021).

While many students recognize the potential of AI to enhance learning, others may feel apprehensive about the changes it brings to traditional educational practices. For instance, some students may fear that AI could replace human interaction, leading to a more isolated learning experience (Rodway & Schepman, 2023). Conversely, students who have positive experiences with AI tools often report increased motivation and engagement in their studies . The effectiveness of AI tools in education heavily depends on students' ability to use these technologies appropriately. Comprehensive training and support looks important to help students develop the necessary skills to leverage AI effectively. Without proper guidance, students may struggle to integrate AI into their learning processes, leading to frustration and negative attitudes towards AI (Zhai et al., 2021).

Institutional support plays a vital role in shaping students' perceptions of AI. Educational institutions need to implement clear policies and provide adequate training to both students and educators. This support helps that AI tools are used ethically and effectively, thereby maximizing their potential benefits while minimizing risks (Chauncey & McKenna, 2023). Moreover, transparency about the capabilities and limitations of AI technologies is essential. Institutions should communicate clearly about how AI tools are used, the data they collect, and the safeguards in place to protect students' privacy and data security. This transparency helps build trust and fosters a positive perception of AI among students (Rodway & Schepman, 2023).

The impact of AI on students' perceptions in educational settings is various, encompassing both positive and negative aspects. While AI offers multiple benefits, it also presents challenges related to academic integrity, bias, and ethical use. Addressing these challenges through clear policies, training, and ongoing support will help ensure that AI enhances educational quality and promotes positive student experiences.

2.5 Current perceptions of AI at the Vrije Universiteit

The VU is recently researching to integrate AI into its educational framework (Vrije Universiteit Amsterdam, 2023a). This initiative is part of a broader effort to harness AI's potential while maintaining ethical standards and academic integrity. The VU-UvA taskforce on AI in education underscores the importance of transparency and ethical use of AI in academic settings. Both faculty and students are encouraged to be open about their use of AI tools, such as generative AI, ensuring that these technologies are used to enhance rather than compromise educational outcomes (Vrije Universiteit Amsterdam, 2023a). The taskforce has initiated various activities to foster an understanding of AI's role in education. For instance, they have developed the AI Maturity in Education Scan (AIMES), which aids educators in assessing their AI literacy and integrating AI tools effectively into their teaching practices. This initiative reflects the university's commitment to enhancing the quality of education and preparing students for a future where AI is prevalent (Vrije Universiteit Amsterdam, 2023c). However, despite these efforts, it remains unclear whether all students within the VU are fully aware of these resources and initiatives. This raises questions about the reach and effectiveness of the university's communication regarding AI integration in education.

Benefits

AI presents several benefits to the educational environment at VU. One of the most notable advantages is the potential for personalized learning experiences. AI can adapt educational content to meet the individual needs of students, thereby promoting a more efficient and effective learning process. AI tools can provide real-time feedback and support, enabling students to grasp complex concepts at their own pace. Additionally, AI can assist educators by automating administrative tasks, thus allowing them to focus more on teaching and student engagement (Vrije Universiteit Amsterdam, 2023a). Furthermore, AI-driven tools can help in the creation of adaptive learning platforms that adjust the difficulty level of exercises based on the learner's progress. This capability not only enhances learning outcomes but also ensures that students remain engaged and motivated throughout their educational journey. The VU's emphasis on AI literacy among educators, as highlighted by the AIMES initiative, is a testament to the university's proactive approach in leveraging AI to improve educational quality (Vrije Universiteit Amsterdam, 2023c).

Challenges

Besides the numerous benefits, the integration of AI into education at VU also brings several challenges. A big concern is maintaining academic integrity. As AI tools become more sophisticated, there is an increased risk of misuse by students to gain unfair advantages. The taskforce stresses the necessity for clear policies and guidelines to ensure the responsible and ethical use of AI. This includes transparency from AI software vendors regarding their products' capabilities and limitations, as well as their environmental impact (Vrije Universiteit Amsterdam, 2023a; Vrije Universiteit Amsterdam, 2023b). Another challenge is addressing the biases inherent in AI systems. AI algorithms can perpetuate existing biases present in the data they are trained on, leading to ethical and fairness issues in educational settings. Educators are encouraged to critically evaluate the use of AI and to remain vigilant about the potential for bias, ensuring that AI applications promote inclusivity and equity. The VU has also developed specific guidelines and expectations regarding the use of generative AI by students to align their usage with the university's academic integrity standards (Vrije Universiteit Amsterdam, 2023a).

Despite these comprehensive efforts, a critical question persists: Are all students at VU aware of these resources and new guidelines?

3 RESEARCH STRATEGIES AND RESEARCH METHODS

In this thesis, a qualitative research approach has been adopted, which is particularly suited to deeply explore the nuanced perceptions and experiences of stakeholders. A qualitative approach is fundamental to this study as it facilitates a detailed examination of complex issues that quantitative methods might not fully capture, such as the subjective impacts of AI on educational processes and stakeholder interactions with new technologies.

Semi-Structured Interviews
The core of the data collection method consists of semi-structured interviews. This format was chosen because it allows for flexibility in responses, enabling participants students and faculty members to express their thoughts in rich detail, which is important for understanding the implications of AI in education. These interviews are designed to probe deeper into the attitudes and behaviors related to AI, uncovering insights that structured surveys might overlook. The semi-structured nature of these interviews provides the opportunity to follow topics as they emerge during conversations, thus ensuring that each interview can adapt to reveal the most valuable and pertinent information. This is particularly important when discussing complex and evolving topics such as AI applications, ethical considerations, and the integration challenges within educational settings.

3.1 Respondents

The respondents for this study were carefully selected to provide a full understanding of the impact of AI. Both students and faculty members were included in the research for several reasons:

1. Diverse Perspectives: Including both groups ensures a holistic view of AI's impact, capturing the experiences and perceptions of those who teach and those who learn. This dual perspective is crucial for understanding the full scope of AI integration in education.

2. Direct Experience: Students and faculty members are the primary stakeholders directly interacting with AI tools and technologies in their educational environment. Their firsthand experiences provide invaluable insights into the practical implications, benefits, and challenges of AI in education.

3. Influence on Adoption and Integration: Understanding the perceptions of both students and faculty members is essential for identifying factors that influence them.

Recruitment of Respondents
Students: Students were approached through existing networks at Vrije Universiteit.

Faculty Members: Through the assistance of our mentor Anna Bon and the VU.

3.2 Research Design

In this study, semi-structured interviews were conducted online via Microsoft Teams with respondents comprising students and faculty members from the Vrije Universiteit. The interview process was divided into two distinct questionnaires tailored to each group, ensuring that the specific experiences and insights of both students and faculty members were adequately captured.

Interview Structure for Students

1. Introduction
2. Demographic and Background Information
3. Experience with AI in Education
4. Perception and Impact of AI
5. Ethical and Privacy Concerns
6. Influence on Academic Practices
7. Suggestions and Improvements

Interview Structure for Faculty Members

1. Background Information
2. Observations and Insights
3. Ethical and Administrative Considerations
4. Impact on Teaching and Learning
5. Academic Integrity and Fairness
6. Future Perspectives and Suggestions

By conducting these interviews online via Microsoft Teams, this study ensured accessibility and convenience for all participants. The structured approach of having separate questionnaires for students and faculty members allowed for targeted data collection.

3.3 Analysis

The qualitative data collected through semi-structured interviews were analyzed by categorizing respondents' answers into themes. This thematic analysis approach facilitated the identification and exploration of key patterns and insights.

First, all interviews were transcribed to ensure accuracy and completeness of the data. The transcribed data were then systematically reviewed, and responses were categorized into relevant themes. This process involved summarizing each transcript for both students and faculty members, highlighting significant insights and recurring patterns.

For each group of respondents, summaries of the categorized themes were created to provide a concise overview of the main findings from the interviews. These summaries were then compared against the theoretical background established in this study. This comparison aimed to identify consistencies, discrepancies, and potential new insights that emerged from the data. By comparing the respondents' answers with the theoretical background, the analysis aimed to uncover new findings and gain a deeper understanding of AI's impact on education. Any new insights or themes that were not previously considered in the theoretical background were noted and included in the study's conclusions.

The analytical focus was divided into several key areas. First, the experience with AI in education was categorized and analyzed to understand how students and faculty members describe their interactions with AI tools, including the frequency of use, types of tools, and specific applications within the educational context. Second, the perception and impact of AI were explored and categorized to

capture participants' views on the benefits and challenges of AI, including its impact on learning experiences, teaching practices, and academic outcomes. Third, ethical and privacy concerns were investigated and categorized to address issues related to data privacy and the ethical implications of AI usage, as well as the adequacy of existing policies to manage these concerns. Fourth, the influence on academic practices was examined and categorized to understand changes in study habits, teaching methodologies, and assessment practices influenced by AI. Finally, suggestions and improvements were collected and categorized to gather recommendations from participants on how AI tools and their implementation could be improved to better meet educational needs and expectations.

3.4 Method: Theoretical Framework

The study utilizes Business Process Model and Notation (BPMN) to develop the theoretical framework. BPMN is a widely accepted standard for modeling business processes and is particularly effective for depicting complex interactions and workflows in a clear, understandable manner (Chinosi Trombetta, 2012).

Rationale for Using BPMN

BPMN offers several advantages for this research:

- **Clarity and Standardization:** BPMN provides a standardized method for illustrating processes, making it easier for various stakeholders to understand and interpret the diagrams.
- **Detailed Process Visualization:** It allows for the detailed representation of workflows, including the sequence of activities, decision points, and the roles of different participants.
- **Flexibility:** BPMN is flexible enough to model both current and future states of processes, which is essential for comparative analysis.

4 RESULTS

4.1 Students: Results

Respondent 1 (Third-year student of Governance and Organizational Sciences)

Respondent 1, a third-year student of Governance and Organizational Sciences at the VU, uses AI technologies such as ChatGPT primarily to better structure and improve texts he has written. He values AI for providing more structured and readable texts, benefiting both his studies and daily life. Although he uses AI technologies mainly for his studies, he also sees practical applications in daily life, such as quickly obtaining information.

One advantage of AI for Respondent 1 is time savings. He emphasizes that AI tools like ChatGPT make it possible to edit texts more quickly and efficiently, which is important for his studies. He states, I use it quite a lot to better structure texts I've already written and to improve word choice and punctuation, making the text easier to read. Additionally, AI helps with brainstorming and overcoming writer's block. When he gets stuck while writing, AI can generate logical continuations of his texts, enabling him to better apply his own ideas and continue writing. He explains, When I got stuck in the middle of writing a letter, I used AI to provide a logical answer, which helped me continue writing.

Despite these benefits, Respondent 1 acknowledges the challenges and drawbacks of using AI. One of the biggest drawbacks he mentions is the dependency on AI tools. He has noticed that if the AI tool is temporarily unavailable, it can disrupt his study process. He notes, If the AI tool goes down or the site is overloaded, I sometimes don't know what to do. Furthermore, he points out the limitations of AI in generating high-quality final products. While AI can help with structure and logical reasoning, the final product needs to be refined by the user. He remarks, AI can provide good structure and logical ideas, but it can't yet produce a good final product.

Respondent 1 does not have major concerns about data privacy and ethical issues related to AI use. He considers internet privacy a lost cause and sees data collection by AI as a necessary step for machine learning. He acknowledges, however, that AI tools can promote unfair academic practices, such as plagiarism in group projects, and suggests that universities should adapt their curriculums to combat this. For example, he suggests creating assignments that are difficult for AI to fake, such as requiring audio recordings along with transcripts. He states, AI can lead to unethical behavior from students towards the university, and the university should adapt its curriculum to combat this.

This respondent views AI as a valuable resource that has streamlined and made his study process more efficient. He believes that AI will play a lasting role in education and that institutions must adapt to these technologies to fully benefit from their advantages while also addressing the ethical challenges they present.

Respondent 2 (First-year student of Governance and Organizational Sciences)

Respondent 2, a first-year student of Governance and Organizational Sciences at the VU, has also used AI tools into her study routine. Initially unfamiliar with AI's potential, she learned about its applications from peers and started using it more frequently over time. Her first encounter with AI was primarily for study purposes, and she has since expanded its use to include summarizing texts and generating ideas for assignments. She explains, I use it more for making summaries of texts I need to read.

One of the main benefits Respondent 2 identifies is the efficiency AI brings to her learning process. She notes, It helps me learn faster and more effectively, as I can quickly grasp the main points of less important literature without reading everything. Additionally, AI assists in brainstorming and providing clearer explanations than sometimes received from teachers. She states, It can also give you ideas for concepts, and explanations from AI are often clearer, presented in bullet points.

However, Respondent 2 is also aware of the drawbacks. She mentions the risk of becoming overly reliant on AI, leading to laziness. You let AI do things you can do yourself, like reading literature and generating concepts for reports, making you lazier, she admits. Another significant concern is the fear of being caught for plagiarism, especially with the growing use of AI detection tools. She explains,

I'm afraid of being caught using AI for reports, even when I haven't used it, because of certain writing styles that might get flagged incorrectly.Regarding ethical and privacy concerns, Respondent 2 is somewhat indifferent, noting, I'm not really worried about privacy because I don't put sensitive information into AI tools.

Respondent 2 acknowledges that AI can facilitate unethical academic practices but is skeptical about the effectiveness of current AI detection tools. Universities should ensure these tools are reliable before using them to check for AI-generated content, she suggests. Despite the potential for AI to be misused, she believes that a moral responsibility lies with students to use AI as an aid, not a substitute for their work.

When asked about the future of AI in education, Respondent 2 doubts that universities can completely prevent its use. AI is getting smarter, and tools to detect AI-generated content may never be fully reliable, she says. She supports the idea of on-campus exams and physical assessments to mitigate AI misuse but recognizes the challenges of implementing such measures for assignments like essays.

Overall, Respondent 2 views AI as a helpful tool that enhances learning efficiency and creativity but cautions against over-reliance and the ethical implications of its misuse. She suggests that while guidelines and education about AI use are beneficial, enforcing strict rules may not be practical or effective in deterring misuse. Respondent 2 states, Maybe they can give more education about how you can use it, but setting rules might not be very effective because if someone wants to use it, they'll find a way despite the rules. So, it could be more like a seminar to explain how to use AI.

Respondent 3 (Master's Student in Artificial Intelligence)
Respondent 3 is a master's student in Artificial Intelligence at the VU. He utilizes AI technologies such as ChatGPT extensively to assist with his studies. He values AI for its ability to provide quick answers, detect bugs in programming, and outline the big picture in complex assignments. He describes AI as a fast and efficient tool that significantly aids in his learning process.

One of the primary benefits of AI for Respondent 3 is its speed and efficiency. He explains, AI helps a lot to detect bugs and find the correct answers quickly. It shows me the way forward, providing a broad overview even if it doesn't give all the details. He uses AI tools like ChatGPT as an advisor to clarify assignments and guide his study process. For instance, when faced with a challenging task, he consults ChatGPT for explanations and suggestions, allowing him to understand and approach the problem more effectively.

Respondent 3 frequently uses AI tools for various tasks, including programming. He mentions that when he encounters a bug he cannot easily resolve, he turns to ChatGPT to identify the issue in his code. For programming, if there's a bug I can't see, I use ChatGPT to figure out the problem, he says. This frequent use highlights AI's role in enhancing his problem-solving skills and academic performance.

However, Respondent 3 acknowledges the challenges associated with using AI. Initially, he struggled with prompt engineering, finding it difficult to communicate his needs to the AI effectively. Over time, he learned to craft better prompts, which improved the AI's usefulness. Another challenge was the limitations of the AI interface, particularly with GPT-3.5, which only accepted text input, making it difficult to convey complex formulas or screenshots. Despite these challenges, Respondent 3 adapted and found ways to use AI more effectively.

Respondent 3 also expresses concerns about data privacy in the context of AI usage. As a data engineer, he is cautious about sharing personal identifiable information (PII) with AI systems. I don't trust AI systems with personal data. When dealing with PII, I hash the data or send a schema instead of the actual data, he explains. This cautious approach underscores the importance of data privacy and security in the use of AI technologies.

In terms of academic integrity, Respondent 3 recognizes the potential for AI to encourage dishonest practices. He points out that students could misuse AI tools to plagiarize assignments by simply asking AI to rewrite texts. AI can definitely encourage dishonesty by making it easy to rewrite someone else's work, he notes. He suggests that universities need to adapt their assessments to prevent such misuse and promote ethical behavior.

To enhance the effectiveness of AI tools in education, Respondent 3 proposes several improvements. He recommends updating the curriculum to include courses on the latest AI models and prompt engineering. Students need to learn about the latest advancements in AI, such as new language models and their applications. There should also be a course on prompt engineering to teach us how to create effective inputs for AI models, he suggests. Additionally, he sees potential in AI applications that can summarize lecture content and course materials, making it easier for students to grasp complex information.

Overall, Respondent 3 views AI as a valuable resource that enhances his learning experience by providing quick and accurate assistance. He believes that while AI presents challenges, particularly regarding data privacy and academic integrity, it also offers significant benefits that can transform education. Respondent 3 emphasizes the need for continuous adaptation and improvement in the use of AI in academic settings to fully leverage its advantages while addressing ethical concerns.

Respondent 4 (Master's Student in Artificial Intelligence)
Respondent 4 is a master's student in Information Science at the Faculty of Science at the VU. He uses AI such as ChatGPT and DALL-E primarily for coding assistance and generating ideas for assignments. He first encountered AI tools during his professional career, where a colleague introduced him to ChatGPT.

The student began using AI tools for educational purposes after starting his master's program. He primarily uses ChatGPT for debugging code, explaining, When there's an issue with my code that

I can't identify, I ask ChatGPT what's wrong, and it sometimes provides the solution. Additionally, he has used DALL-E for generating images required for certain assignments.

He utilizes AI tools about once every week or two, depending on his workload. He states, If I'm coding, I use it more frequently, but for writing assignments, I use it less often. He acknowledges that while AI tools could be beneficial for writing, he prefers to write his thoughts independently, finding satisfaction in the process of drafting his own ideas.

Respondent 4 views AI tools as generally positive for his studies, though he notes that he does not use them as extensively as some of his peers. He appreciates the quick feedback and assistance AI provides, particularly in coding assignments, allowing him to resolve issues without having to seek help from others. Using ChatGPT is like having a study assistant that helps with specific tasks, making the study process more efficient, he says.

Despite the benefits, he has encountered some challenges with AI tools. He mentions that AI-generated solutions are not always perfect and can sometimes produce errors or irrelevant results. For instance, when asking for help with a function, the AI provided a non-functional solution, which he had to correct manually. He also notes that generating accurate images with DALL-E can be time-consuming and sometimes frustrating. AI tools aren't perfect and can make mistakes, which means you need to verify and adjust the results yourself, he notes.

He is cautious about using AI tools for work-related tasks involving sensitive information. He explains, I don't put personal or confidential data into AI tools because they store and learn from it. For general use, I'm not too worried, but I avoid inputting sensitive information.

Regarding academic integrity, he acknowledges that AI tools can potentially encourage dishonest practices, such as plagiarism. He believes that students who rely too heavily on AI might miss out on essential learning processes. If everyone can use AI tools to get better grades, it might seem unfair, but it's up to the individual to use these tools responsibly. He suggests that students who misuse AI tools might ultimately hinder their own learning and career prospects.

He recommends that VU should provide tutorials on how to use AI tools effectively and responsibly. He proposes incorporating AI tool usage into the curriculum in a way that encourages ethical practices. A mini-tutorial on using AI tools responsibly could help new students use these technologies without compromising their education. He also suggests that courses on the latest AI models and prompt engineering would be beneficial, helping students stay current with technological advancements.

The student believes that AI will continue to play a significant role in education, despite potential challenges. He sees the need for universities to adapt by integrating AI tools in a way that complements traditional learning methods. AI is here to stay, and we need to learn how to use it effectively while maintaining academic integrity.

Respondent 5 (First-Year Medical Student)
Respondent 5 is a first-year medical student at the VU. She has limited experience with AI technologies prior to their integration into her courses. Her primary interaction with AI includes using tools like ChatGPT and Perplexity. While she acknowledges the popularity of these tools, she admits to not using AI extensively or being very familiar with its broader applications.

One of the key benefits of AI for Respondent 5 is its ability to provide answers quickly. She explains, when you search for something on Google, you often get a very short answer or not exactly what you're looking for. But with AI, like ChatGPT, you get a more personalized text about what you're searching for. This feature makes it easier for her to find detailed information efficiently, which is especially useful for quick information retrieval. Despite this, she primarily uses AI as a search engine for in-depth information, while still relying on Google for quick searches.

However, Respondent 5 has encountered some challenges with AI. She mentions that sometimes the AI does not understand her queries or provides incorrect answers, which requires her to rephrase her questions. Additionally, she notes that AI is not always accurate with calculations, which can be a limitation for certain tasks. Sometimes it doesn't understand what I mean, or it gives the wrong answer. With calculations, it's not always 100% accurate she says. These issues highlight the occasional unreliability of AI tools in providing precise information.

Regarding data privacy, Respondent 5 expresses moderate concern. She compares AI to social media platforms, stating, I don't think AI is necessarily worse than, for example, Facebook or Instagram in that regard. While she is aware of the potential privacy issues, she views them as similar to those associated with other widely used technologies.

Respondent 5 also reflects on the ethical implications of AI in education. She believes that AI does not necessarily promote unfair academic practices more than existing methods. People who want to cheat will do so anyway. AI might make it a bit easier, but I don't think it inspires people to become lazier she remarks. She suggests that AI should be embraced and integrated into educational practices rather than banned, acknowledging the difficulty in completely prohibiting its use.

To improve the effectiveness of AI tools in her studies, Respondent 5 suggests using AI as a supportive tool rather than something that takes over all tasks. She emphasizes the potential of AI to enhance learning when used appropriately, advocating for its use as a modern equivalent of Google for specific searches. We can use AI like Google to look up specific things she proposes, highlighting the importance of using AI for its intended purpose.

Respondent 5 envisions specific AI applications that could benefit her field of study. She expresses interest in an interactive AI app for medical education that visualizes the human body and allows for

practical demonstrations. An AI app that helps you learn anatomy through a visual and interactive experience would make learning easier she suggests. This highlights her desire for AI tools that enhance visual learning and provide hands-on educational experiences.

4.2 Students: Summary Analysis of the results

Current Usage. A finding of this study is that all respondents reported using ChatGPT, highlighting its widespread adoption and versatility in supporting various academic tasks.

- **Enhanced Text Structuring and Readability:** Respondent 1 uses ChatGPT to improve text structure and readability, aligning with historical AI applications for instructional support. He states, I use it quite a lot to better structure texts I've already written and to improve word choice and punctuation, making the text easier to read.
- **Adaptive Learning and Idea Generation:** Respondent 2 uses AI for summarizing texts and generating ideas, demonstrating AI's role in adaptive learning. She explains, I use it more for making summaries of texts I need to read. This reflects AI's ability to provide personalized learning experiences.
- **Real-Time Problem Solving and Debugging:** Respondent 3 relies on AI for quick problem-solving and debugging. He highlights AI's efficiency, stating, AI helps a lot to detect bugs and find the correct answers quickly. It shows me the way forward, providing a broad overview even if it doesn't give all the details.
- **Code and Visual Content Creation:** Respondent 4 uses AI tools like ChatGPT and DALL-E for coding assistance and generating images. He notes, When there's an issue with my code that I can't identify, I ask ChatGPT what's wrong, and it sometimes provides the solution.

BENEFITS OF AI IN EDUCATION

The benefits of AI in education align closely with the theoretical background discussion on the advantages of AI technologies in educational settings.

Personalized Learning and Efficiency. Respondent 1, values AI for its ability to enhance text readability and structure, which improves his study efficiency. He states, I use it quite a lot to better structure texts I've already written and to improve word choice and punctuation, making the text easier to read. This aligns with the theoretical background emphasis on AI's potential to provide personalized learning experiences by adapting educational content to meet individual needs (Zhai et al., 2021). The ability of AI to offer instant feedback and support enables students to understand complex concepts more quickly and effectively, a benefit that Respondent 2 also acknowledges. She notes, It helps me learn faster and more effectively, as I can quickly grasp the main points of less important literature without reading everything.

Enhanced Understanding and Problem-Solving. Respondent 3, highlights AI's role in facilitating problem-solving and understanding complex assignments. He explains, AI helps a lot to detect bugs and find the correct answers quickly. It shows me the way forward, providing a broad overview even if it doesn't give all the details. This reflects the theoretical background discussion on AI's capability to enhance learning outcomes by offering immediate, actionable feedback and supporting problem-solving tasks (Rodway & Schepman, 2023).

Support for Brainstorming. AI's role in aiding brainstorming is another benefit highlighted by the students. Respondent 1 uses AI to generate logical continuations of his texts, enabling him to better apply his own ideas. He states, When I got stuck in the middle of writing a letter to Parliament, I used AI to provide a logical answer, which helped me continue writing. Respondent 2 also benefits from AI-generated ideas, noting, It can also give you ideas for concepts, and explanations from AI are often clearer, presented in bullet points. These experiences align with the backgrounds emphasis on AI's ability to facilitate creative and innovative teaching and learning strategies by automating routine tasks and freeing up time for more creative pursuits (Lim et al., 2023).

CHALLENGES AND DRAWBACKS

The experiences of students also highlight several challenges and drawbacks associated with the use of AI tools, which align with the concerns discussed in the theoretical background.

Dependency and Reliability Issues. A concern raised by Respondent 1 is the dependency on AI tools. He mentions that the temporary unavailability of AI tools can disrupt his study process. He states, If the AI tool goes down or the site is overloaded, I sometimes don't know what to do. This reliance on AI reflects a broader issue of technological dependency, where students may struggle to perform tasks independently without AI assistance.

Limitations in AI Outputs. Respondent 1 also points out the limitations of AI in generating high-quality final products. While AI can assist with structure and logic, the final output often requires significant refinement by the user. He remarks, AI can provide good structure and logical ideas, but it can't yet produce a good final product. This indicates that AI tools, despite their capabilities, still lack the nuance and creativity that human oversight can provide.

Similarly, Respondents 4 and 5 experiences errors in AI-generated solutions and emphasizes the need to verify results manually. He notes, AI tools aren't perfect and can make mistakes, which means you need to verify and adjust the results yourself. This highlights the ongoing need for human intervention to ensure accuracy and quality in AI-assisted work.

Initial Learning Curve. Respondent 3 initially struggled with prompt engineering, finding it difficult to communicate his needs to the AI effectively. Over time, he learned to craft better prompts, which improved the AI's usefulness. He explains, Initially, I found it challenging to get the AI to understand what I needed, but with practice, I learned how to phrase my questions better. This learning curve can be a barrier for students new to using AI tools, indicating the need for proper training and support.

Ethical and Privacy Concerns. Data privacy is a significant concern for Respondent 3, who is cautious about sharing personal identifiable information with AI systems. He states, I don't trust AI systems with personal data. When dealing with PII, I hash the data

or send a schema instead of the actual data. This cautious approach underscores the importance of robust data privacy measures and compliance with regulations to protect students' information.

Potential for Academic Misuse. Several respondents acknowledged the potential for AI to promote dishonest academic practices, such as plagiarism. Respondent 1 notes, AI can lead to unethical behavior from students towards the university, and the university should adapt its curriculum to combat this. Respondent 4 adds that students who rely too heavily on AI might miss out on essential learning processes. He states, If everyone can use AI tools to get better grades, it might seem unfair, but it's up to the individual to use these tools responsibly. This reflects the theoretical backgrounds discussion on the need for clear policies and guidelines to ensure the ethical use of AI in academic settings.

INSTITUTIONAL SUPPORT AND FUTURE DIRECTIONS

The analysis of the students' experiences with AI underscores the role of institutional support in maximizing the benefits of AI technologies while addressing their challenges. This aligns with the theoretical background emphasis on the importance of clear policies, comprehensive training, and continuous support to effectively integrate AI into educational practices.

Educational Resources and Training. One of the key recommendations from the respondents is the need for educational resources and training to help students and faculty effectively use AI tools. Respondent 4 suggests that VU should provide tutorials on how to use AI tools responsibly and effectively. He states, A mini-tutorial on using AI tools responsibly could help new students use these technologies without compromising their education. This recommendation aligns with the theoretical backgrounds emphasis on the need for comprehensive training and support to help students develop the necessary skills to leverage AI effectively (Chauncey & McKenna, 2023).

Respondent 3 further recommends incorporating courses on the latest AI models and prompt engineering into the curriculum. He notes, Students need to learn about the latest advancements in AI, such as new language models and their applications. There should also be a course on prompt engineering to teach us how to create effective inputs for AI models.

Curriculum Adaptation. Several respondents emphasized the need for curriculum adaptation to mitigate the potential misuse of AI. Respondent 1 and Respondent 3 suggest creating assignments that are difficult for AI to fake, such as requiring audio recordings along with transcripts. Respondent 1 states, AI can lead to unethical behavior from students towards the university, and the university should adapt its curriculum to combat this. Respondent 2 supports on-campus exams and physical assessments to mitigate AI misuse, although she acknowledges the practical challenges of implementing such measures.

Transparency and Trust. Transparency about AI tools' data usage and capabilities is important for building trust among students and educators. Respondents have called for clear communication regarding how AI tools are used, the data they collect, and the safeguards in place to protect students' privacy and data security.

4.3 Faculty Members: Analysis of the Results

Background and Current Role. Victor de Boer is an associate professor in the Department of Computer Science at the VU, specializing in User Centric Data Science. He has been with VU since 2010 and also serves as the chair of the examination board for the Faculty of Computer Science. His role involves teaching courses such as ICT4D, alongside overseeing exam integrity and the integration of AI into educational practices.

Alice Schaap is a policy advisor and a staff member at the Vrije Universiteit. Her role involves advising on the integration of AI in education, working with various task forces and working groups dedicated to this cause. She emphasizes the importance of involving different academic fields and the need for continuous adaptation and policy development.

Current perception of A.I. According to Victor de Boer, the VU is conducting research on the integration of AI in education on multiple fronts. Faculty at VU, including Victor himself, are investigating how AI tools can be used to design and enhance education. For example, AI is being used to generate exam questions and create educational materials such as summaries and presentations. This research helps support teachers in their educational practices.

Alice Schaap adds that the VU has a taskforce with experts from different fields to advise on AI in education. This taskforce includes representatives from both the VU and UvA and aims to develop guidelines and support for the use of AI. She mentions that there are currently 2 or 3 students involved in the taskforce, but they face challenges in effectively communicating their message about AI in education to the entire student community at VU. This taskforce works to ensure policies are relevant and effective by including student feedback in these discussions.

Victor highlights that an important aspect of the research is the impact of AI on assessment and academic integrity. The Examination Committee is developing guidelines to ensure that assessments are valid, transparent, and resistant to AI misuse. This includes measures such as requiring at least one individually and non-digitally administered component in every assessment. He mentions that VU regularly holds discussions with faculty to share experiences and practices regarding the use of AI in education. These discussions have led to adjustments in courses and assessment formats, such as administering physical exams for programming courses to ensure authenticity. The VU prioritizes ensuring that assessments accurately reflect the learning objectives of each course. Maintaining academic integrity while achieving these goals is crucial. This focus on alignment between assessments and course objectives is essential for student success.

Alice Schaap notes that the communication process among stakeholders is not always organized, leading to the need for comprehensive feedback from all involved to create effective guidelines and policies.

BENEFITS OF AI IN EDUCATION

Supporting Diverse Student Populations. Victor highlights several benefits of AI, particularly its ability to support diverse student populations. AI can assist students with writing, improving their communication skills, and providing personalized tutoring. AI can support diverse student populations by assisting with writing and improving communication models. It also provides feedback in programming education, which is beneficial for learning, he explains.

Enhancing Communication Skills. Victor elaborates on the specific ways AI benefits different student groups. For instance, he points out that non-native English speakers often struggle with articulating their thoughts clearly in written form. AI tools can help these students by providing suggestions for improving grammar, sentence structure, and vocabulary, thereby enhancing their overall communication skills. It helps very much to get your ideas on paper, especially for those who are not very proficient in English, he mentions.

Providing Real-Time Feedback in Programming Education. Additionally, AI can offer significant support in programming education. Victor highlights how AI tools provide instant feedback on coding assignments, allowing students to identify and correct errors in real-time. This feedback loop helps students learn more efficiently by understanding their mistakes as they work through problems. AI offers real-time feedback, which is relevant for learning how to code. It helps students understand where they went wrong and how to fix it, he explains.

Personalized Tutoring. Victor also sees potential in using AI for personalized tutoring. AI-driven platforms can adapt to each student's learning pace and style, providing tailored support that addresses individual needs. This approach can be particularly beneficial for students who require extra help or those who want to advance at a faster pace. AI can serve as a personalized tutor, adapting to the needs of each student and providing support where it's needed most, he notes.

Automating Routine Tasks. Furthermore, AI can enhance the efficiency of the learning process by automating routine tasks such as grading and providing standardized feedback. This automation allows educators to focus more on interactive and engaging teaching activities, ultimately improving the quality of education. Victor observes, AI can handle routine tasks like grading, which frees up time for teachers to engage more directly with students.

Complementing Traditional Teaching Methods. Victor emphasizes the importance of integrating AI in a way that complements traditional teaching methods rather than replacing them. He believes that AI should be used to enhance the learning experience by providing additional resources and support, rather than as a substitute for human interaction and mentorship. AI is a tool to enhance education, not replace the human elements that are crucial for effective learning, he states.

CHALLENGES AND DRAWBACKS

Detection of AI-Generated Responses. Current detection tools are not always reliable, posing a risk to academic integrity. We know that those detection tools don't really work and are also legally questionable, so we can't rely on them, he explains. This unreliability necessitates the development of new assessment methods that can effectively evaluate student knowledge and skills without the risk of AI misuse.

Ensuring Fair and Valid Assessments. One of the primary challenges is ensuring that assessments remain fair and valid in the presence of advanced AI tools like ChatGPT. Victor emphasizes that traditional assessment forms, such as essays, can be easily compromised by AI, making it difficult to ascertain whether the student has truly understood the material. The availability of AI tools like ChatGPT raises questions about the validity of traditional assessment forms. We need to adapt assessments so that students can demonstrate their knowledge and skills without unauthorized AI use, he states.

Exploring Alternative Assessment Methods. Victor suggests that universities need to explore alternative assessment methods, such as oral exams and practical tests conducted in controlled environments, to mitigate the risk of AI misuse. These methods can provide a more accurate measure of a student's understanding and ability to apply their knowledge. He notes, Assessments should include more oral exams or practical exams in a controlled setting to ensure students demonstrate their understanding genuinely.

Lack of Clear Guidelines and Transparency. Another significant challenge is the lack of clear guidelines and transparency regarding AI usage. Victor points out that there is no uniform approach within VU, leading to inconsistencies in how AI tools are implemented across different courses and departments. There needs to be clear guidelines and transparency in how AI tools are used across the university, he emphasizes. Without standardized policies, both students and faculty may be unsure about the ethical boundaries and appropriate use of AI in academic settings.

ETHICAL AND PRIVACY CONCERNS

Victor underscores the importance of transparency regarding how AI tools process data. The specific operations of AI models, such as ChatGPT, with regards to prompts and data handling are often unclear, raising concerns about data collection, storage, and usage. He advises caution when using AI tools, especially regarding the input of personal or sensitive information.

Moreover, Victor highlights the need for robust policies to manage these concerns. While there are general privacy and data protection regulations, specific policies tailored to AI usage in education are still developing. This indicates ongoing efforts to establish clearer guidelines.

Alice Schaap discusses the challenges associated with the integration of AI, particularly concerning academic integrity and data privacy. She emphasizes the importance of educating students and faculty about the ethical use of AI tools. This includes understanding the limitations and potential biases of AI technologies. Alice

notes that students often express concerns about accidentally committing academic dishonesty by misusing AI tools. Therefore, part of the education on AI involves making students aware of these risks and teaching them how to use AI responsibly.

The potential misuse of AI tools for academic dishonesty is another concern. Current AI detection tools are not always reliable, making it difficult to distinguish between genuinely student-generated work and AI-generated content. This poses a risk to academic integrity, leading to undetected plagiarism and other forms of cheating. Victor emphasizes the need to adapt assessments to ensure that students can demonstrate their knowledge and skills without unauthorized AI use. Victor also acknowledges that the temptation to misuse AI tools is high, particularly under academic pressure. Students may resort to AI for quick solutions, undermining the learning process by bypassing the effort needed to understand the material fully.

To address these concerns, Victor advocates for clear and transparent guidelines regarding the ethical use of AI in education. These guidelines should be communicated effectively to both students and faculty to ensure everyone understands the acceptable use of AI tools. Additionally, he recommends providing training on responsible AI use and incorporating AI usage policies into the curriculum. This approach can help mitigate risks and promote a culture of responsible AI use.

INSTITUTIONAL SUPPORT AND FUTURE DIRECTIONS

Educational Resources and Training. This support is essential for maximizing the benefits of AI technologies while addressing their inherent challenges. He highlights the need for comprehensive training, clear guidelines, and continuous adaptation to keep pace with technological advancements. One of the primary recommendations from Victor is the need for educational resources and training to help both students and faculty effectively use AI tools.

Curriculum Adaptation. Curriculum adaptation is another key area Victor identifies for institutional support. He stresses the need to design assignments and assessments that are less susceptible to AI-generated plagiarism. Victor likes incorporating methods like oral exams and practical tests conducted in controlled environments to ensure the authenticity of student work. Assessments should include more oral exams or practical exams in a controlled setting to ensure students demonstrate their understanding genuinely, he explains. By adapting the curriculum to incorporate such measures, VU can mitigate the risks of AI misuse and promote academic integrity.

Transparency and Trust. Victor emphasizes the need for clear communication regarding how AI tools are used, what data they collect, and the safeguards in place to protect students' privacy and data security. There needs to be clear guidelines and transparency in how AI tools are used across the university, he emphasizes. This transparency helps build trust and fosters a positive perception of AI, ensuring that its benefits are fully realized without compromising ethical standards.

Looking Towards the Future. Looking towards the future, Victor envisions a more hybrid education system where AI tools play a supportive role while physical presence and interaction on campus remain important. He believes that AI will continue to transform educational practices, but it should complement rather than replace traditional teaching methods. AI is a tool to enhance education, not replace the human elements that are crucial for effective learning, he states. Victor anticipates that AI will be increasingly integrated into educational design, student support, and administrative tasks, creating a more efficient and adaptive learning environment.

Victor also acknowledges the potential for AI to democratize education by providing equitable learning opportunities. He emphasizes the importance of ensuring that all students have access to AI tools, regardless of their socio-economic background. This can be achieved by offering institutional subscriptions to AI services, thereby reducing financial barriers. We sometimes procure software for students to minimize financial barriers, he notes. By making AI tools accessible to all students, VU can promote inclusivity and ensure that everyone benefits from technological advancements.

In conclusion, Victor's insights highlight the necessity of strong institutional support for the ethical and effective integration of AI in education. By providing comprehensive training, adapting the curriculum, ensuring transparency, and promoting equitable access, VU can harness the full potential of AI to enhance educational quality while maintaining academic integrity. Alice Schaap concludes by emphasizing the importance of maintaining academic integrity and teaching students to think critically and independently, regardless of technological advancements. She believes that while AI can transform educational practices, the core values of education should remain intact.

5 THEORETICAL FRAMEWORK

Based on the results, clear current models were designed to create the ideal models for maintaining academic integrity at the VU according making homework assignments and exams. This issue is highly relevant to address, as the results show that all students use ChatGPT, making the use of AI a "wild west" scenario. To tackle this, four models have been created with BPMN. The models can be found in the appendix:

5.1 Current Situation Models

- **Homework Assignments with AI Tools (figure 4)**: The process begins with the professor planning an assignment. Once the assignment is prepared, it is given to the student and uploaded to Canvas, where the student receives it. At this point, students face a choice regarding the use of AI tools to complete their assignments. This decision point is important as it introduces variability in how assignments are approached.

  Due to the lack of proper guidance and education on the use of AI, each student utilizes these tools differently. This diverse usage can range from simple assistance in structuring their work to more extensive use such as generating

content. This variability is a direct result of the absence of clear guidelines and policies regarding AI usage in academic work. Consequently, misuse of AI tools can occur, with some students relying heavily on AI to complete their assignments.

After deciding whether to use AI, students proceed to finish their assignments. Regardless of the method used, they eventually submit their completed work through Canvas. Typically, the submitted assignments are subjected to an automatic plagiarism check. However, these traditional plagiarism detectors are primarily designed to identify copied content from existing sources and are not equipped to detect AI-generated text. This limitation poses a challenge as it allows AI-generated content to bypass these checks undetected.

If no plagiarism is detected, the assignment moves forward to be assessed by the professor. However, professors who are not up-to-date with the capabilities and nuances of generative AI might lack the critical perspective needed to identify AI-generated content effectively. As a result, many assignments that have extensively utilized AI tools may pass through the evaluation process without raising any suspicion. In cases where plagiarism is detected, the examination committee intervenes to handle the fraud cases. This intervention occurs only after the detection step, indicating a reactive rather than proactive approach to managing AI misuse. The committee is responsible for addressing the detected fraud, sending notifications to the concerned students, and taking appropriate actions based on the findings.

The current process reveals significant gaps and issues, primarily stemming from the absence of comprehensive AI usage guidelines and the limitations of traditional plagiarism detectors in identifying AI-generated content. These shortcomings highlight the need for a more robust and adaptive framework to maintain academic integrity in the face of evolving AI technologies.

- **Exam Preparation with AI Tools (figure 5)**: The process for exam preparation begins with the professor planning the exam with the educational goals for the course in mind. The professor considers which skills and knowledge the student must acquire to complete the course. One of the components is a written exam. The student receives the prescribed materials on Canvas. At this stage, students can use AI creatively to learn more efficiently or effectively. How students incorporate AI into their learning varies widely without any formal guidance. This variation means that technically adept students who use AI creatively are likely to perform well in achieving the educational goals. Ultimately, the student completes the exam and submits it, after which the professor assesses the exam. A positive aspect of this process is that it helps prevent AI misuse during physical exams, ensuring that students genuinely meet the learning objectives. Unlike assignments, physical exams make it harder for students to misuse AI, thereby maintaining academic integrity.

5.2 Improved Situation Models

- **Enhanced Process for Homework Assignments (figure 6 & 7)**: The improved situation model for handling homework assignments with AI tools at VU begins with the university proactively developing clear guidelines and policies for AI usage. Recognizing the necessity of regulating AI use in academic work, VU establishes guidelines that outline the ethical use of AI tools. Following the establishment of these guidelines, VU organizes educational sessions conducted by AI experts. These sessions aim to raise awareness among both faculty and students about the ethical and effective use of AI. For professors, the training covers various themes, including understanding how AI works, different applications of AI, how students might use AI, and how educators can incorporate AI into their teaching practices. This knowledge enables professors to align their course objectives with an informed awareness of AI usage.

  An important aspect of these guidelines and policies is that they are driven by input from both students and professors. During the AI education sessions, both groups provide feedback to the AI expert. The AI expert acts as the intermediary, responsible for setting up and updating policies based on this feedback. This ensures that the guidelines remain relevant and effective, addressing the real concerns and needs of the academic community. However, we expect that this process of communication among stakeholders will not always be well-organized. In reality, it is often necessary for communication to flow from all stakeholders like in figure 3 to gain a full view for designing clear guidelines and policies.

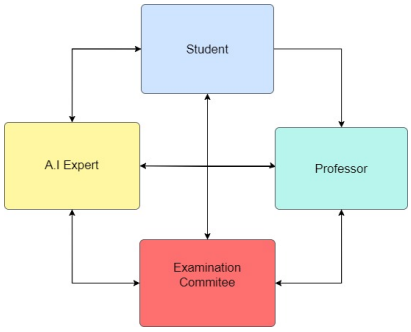

Figure 3: Communication flow between the stakeholders

With a clear understanding of AI and its implications, professors proceed to set their course goals and design homework assignments accordingly. The assignments, now planned with an awareness of AI capabilities and guidelines, are distributed to students via Canvas. This step ensures that all assignments come with clear instructions on the permissible use of AI tools, making students aware of the expectations and responsibilities regarding AI use.

Students then independently decide whether to use AI tools to complete their assignments. By providing AI education, all

students have an equal opportunity to work more effectively and efficiently. In contrast to the current situation, where knowledge about AI use varies widely, resulting in differing student outcomes, the guidelines and sessions provided help them use AI responsibly and ethically. Once the assignment is completed, it is submitted through Canvas and automatically checked by the plagiarism detector. While traditional plagiarism detectors might miss AI-generated content, the improved process includes additional steps to ensure academic integrity.

Professors, now equipped with a better understanding of AI, assess the assignments with a critical eye towards identifying potential AI-generated content. If a professor suspects that an assignment may have been improperly influenced by AI, they can implement additional verification methods. One such method is to request oral or physical exams within the same week. This approach allows professors to directly assess the student's understanding and ensure that the learning objectives are genuinely met. The involvement of the examination committee remains a crucial part of the process. In cases where potential misuse of AI is detected, the committee handles the situation according to the established guidelines. This includes sending notifications to students and taking appropriate actions to address any violations.

- **Enhanced Process for Exam Preparation (figure 8)**: This model for physical exams initially resembles the model for homework assignments. The major difference is that to maintain academic integrity during exams, students need to be equally knowledgeable about using AI for studying. When designing an exam, instructors can utilize AI to create exam questions and other materials. Additionally, students may be provided with AI tools by their instructors to study more effectively for their exams. This is entirely voluntary, so students who prefer traditional learning methods can continue to do so. The key point is that everyone should be able to learn more effectively and efficiently with the help of AI.

5.3 Proposed Course: AI Literacy and Ethics (AILE)

The ideal models recognizes the need for students to be well-versed in the ethical and effective use of AI tools in their academic endeavors. We propose the introduction of a new course titled "AI Literacy and Ethics" (AILE), inspired by the existing Practicum Academische Vaardigheden (PAV) at the University of Amsterdam (UvA). PAV is a year-long course designed to develop students' academic skills, including academic writing, project skills, and presentation skills, through regular sessions that run parallel to their main coursework. Guided by older students in the role of tutors, PAV provides continuous support and feedback to first-year students (Universiteit van Amsterdam, 2018).

Similarly, AILE aims to provide comprehensive education on AI technologies, their applications, and the ethical considerations surrounding their use. The course will run throughout the academic year, with regular sessions facilitated by experienced tutors and AI experts. These sessions will cover various themes, such as understanding how AI works, different applications of AI, how students might use AI in their studies, and how educators can incorporate AI into their teaching practices.

The course will emphasize the ethical use of AI tools, ensuring that students understand the importance of data privacy, academic integrity, and responsible AI usage. Both students and faculty will provide feedback during the AI education sessions, allowing AI experts to update policies and guidelines based on real concerns and needs. This collaborative approach will ensure that the guidelines remain relevant and effective.

By establishing the AI Literacy and Ethics (AILE) course, the VU aims to provide students with the necessary tools and knowledge for using AI in education. This course will ensure that students can leverage AI technologies to enhance their learning experiences while maintaining the highest standards of academic integrity.

6 DISCUSSION

The integration of A.I into educational practices at the VU represents both opportunities and challenges. The findings from the semi-structured interviews conducted for this study underscore the pervasive use of AI-tools like ChatGPT among students for various academic tasks, ranging from drafting essays to solving complex problems. This widespread use has created a "wild west" scenario, where AI usage is largely unregulated, potentially compromising academic integrity. This discussion aims to synthesize the key insights from the research, analyze the implications of these findings, and propose recommendations for the ethical and effective integration of AI in educational settings.

One key finding is the widespread use of AI tools like ChatGPT among students, valued for quick feedback, improved text structure, and problem-solving assistance. However, the variability in usage and lack of clear guidelines raise concerns about misuse and dependency. AI enhances personalized learning, efficiency, and provides real-time feedback. Despite these benefits, challenges include potential over-reliance, unreliable AI outputs, and privacy issues. Robust policies are needed to protect data and ensure ethical use. Academic integrity is at risk.

To address the challenges and leverage the benefits of AI in educational settings, this research developed four models using Business Process Model and Notation (BPMN) to illustrate both current and improved processes at VU. The current situation models highlight significant gaps, including the lack of clear guidelines for AI usage in homework assignments and exam preparations, which lead to varied and potentially unethical AI use among students. In contrast, the improved models propose comprehensive guidelines and policies, AI education sessions for both students and faculty, and preventing misuse of A.I tools. These improvements aim to ensure responsible AI use, maintain academic integrity, and provide equal opportunities for all students to benefit from AI technologies.

Furthermore, VU must recognize that it's not only about evaluating the outcomes of student assignments but also about ensuring that students genuinely learn to achieve these results. This broader approach is essential to fully leverage the benefits of AI and provide equitable learning experiences, ensuring that students meet learning objectives through genuine understanding and skills, not just AI-assisted outcomes.

For future research, it would be valuable to explore potential disruptions following AI in education. As AI continues to evolve and integrate into educational systems, identifying and understanding subsequent technological advancements is crucial. Research should also be extended to other faculties to determine how academic integrity can be preserved across different disciplines. Additionally, various aspects within AI in education, such as the formulation of guidelines and policies, and the practical implementation of AI educational sessions for students and faculty members, warrant further investigation. A prospective study could focus on emerging technologies, examining their potential impacts on teaching and learning processes. It is imperative for the university to anticipate these disruptions to maintain its academic integrity and educational standards. This proactive approach may necessitate increased investment in research and development to better prepare for and adapt to future technological shifts, ensuring that the institution remains at the forefront of educational innovation.

7 LIMITATIONS

The findings of this study are subject to several limitations that must be acknowledged. Firstly, the study's relatively small sample size may not be representative of the entire student population at the VU. This limitation potentially affects the generalizability of the results. The study's focus on the VU means that the findings are context-specific. As such, the results may not be directly applicable to other educational institutions and faculty's without further comparative research.

The subjectivity inherent in the semi-structured interview methodology could also influence the results. The data collected reflects the personal opinions and perceptions of the respondents, which could introduce bias into the interpretation of the findings. Another limitation is the lack of longitudinal data. This research provides a snapshot of current AI usage and perceptions. It does not capture how these perceptions and usages might evolve over time, which would be valuable for understanding long-term trends and impacts.

Technological limitations are also a factor. The study's findings and recommendations are based on the current state of AI technology, which is rapidly evolving. Future advancements in AI could quickly render these findings obsolete. Additionally, the absence of quantitative data. While qualitative insights are valuable, the inclusion of quantitative data could provide a more robust analysis. The lack of statistical analyses restricts the ability to draw conclusions.

8 CONCLUSION

This study aimed to explore the extent to which VU can maintain academic integrity amidst the disruption caused by AI. The findings highlight the widespread use of AI tools, particularly ChatGPT, among students for various academic tasks. The versatility and perceived benefits of AI, such as providing quick feedback, improving text structure, and assisting with complex tasks, are evident. However, the unregulated use of AI has led to concerns about misuse and dependency. The variability in how students use AI, coupled with the lack of clear guidelines and educational support, complicates the situation and compromises academic integrity.

The integration of AI into educational practices at VU shows benefits like personalized learning and efficiency. However, it also brings challenges such as dependency, the unreliability of AI-generated outputs, and data privacy concerns. AI can facilitate academic dishonesty, with current detection tools proving inadequate in ensuring the authenticity of student work. Both students and faculty members recognize the benefits of AI but are equally concerned about its potential misuse and its impact on genuine learning outcomes.

In addressing the main research question, the study proposes a theoretical framework that includes clear guidelines, educational sessions on the ethical use of AI, and mechanisms for continuous monitoring and feedback. This framework aims to maintain academic integrity by regulating AI use and ensuring that students genuinely achieve learning objectives. Maintaining academic integrity is important but the true measure of a student's learning should be based on their understanding and not merely on the results of assignments or exams. The proposed framework ensures that the learning process is evaluated effectively, emphasizing the importance of genuine understanding over mere performance.

In conclusion, the study underscores the need for VU to implement guidelines and policies, provide robust educational support, and continuously adapt to technological advancements to preserve academic integrity. By addressing these challenges and our theoretical framework, VU can ensure that AI enhances the learning experience while maintaining the core values of academic integrity.

REFERENCES

[1] Admodisastro, N. (2021). Evaluation of Disleksia Belajar mobile app for assisting dyslexic junior school students to learn the Malay language. Turkish Journal of Computer and Mathematics Education (TURCOMAT), 12(3), 2230-2235.

[2] Allison, C., Miller, A., Oliver, I., Michaelson, R., & Tiropanis, T. (2012). The Web in education. Computer Networks, 56(18), 3811-3824.

[3] Antonietti, A., & Colombo, B. (2008). Computer-supported learning tools: A bi-circular bi-directional framework. *New Ideas in Psychology, 26*(1), 120-142.

[4] Chan, C. K. Y., & Hu, W. (2023). Students' voices on generative AI: Perceptions, benefits, and challenges in higher education. *International Journal of Educational Technology in Higher Education, 20*(1), 43.

[5] Chauncey, S. A., & McKenna, H. P. (2023). A framework and exemplars for ethical and responsible use of AI Chatbot technology to support teaching and learning. *Computers and Education: Artificial Intelligence, 5*, 100182. https://doi.org/10.1016/j.caeai.2023.100182

[6] Chinosi, M., & Trombetta, A. (2012). BPMN: An introduction to the standard. *Computer Standards & Interfaces*, 34(1), 124–134. https://doi.org/10.1016/j.csi.2011.06.002

[7] Cordova, J. (2018). EFL blended-teaching practice: a case study of VULC. In ASEAN/Asian Academic Society International Conference Proceeding Series (pp. 179-185).

[8] Eden, C. A., Chisom, O. N., & Adeniyi, I. S. (2024). Integrating AI in education: Opportunities, challenges, and ethical considerations. *Magna Scientia*

Advanced Research and Reviews, 10(2), 006-013.
[9] Harry, A. (2023). Role of AI in Education. *Interdiciplinary Journal and Humanity (INJURITY), 2*(3), 260-268.
[10] Huang, A. Y., Lu, O. H., & Yang, S. J. H. (2023). Effects of Artificial Intelligence–Enabled personalized recommendations on learners' learning engagement, motivation, and outcomes in a flipped classroom. *Computers & Education, 194*, 104684. https://doi.org/10.1016/j.compedu.2022.104684
[11] Irfan, M., Aldulaylan, F., & Alqahtani, Y. (2023). Ethics and privacy in Irish higher education: a comprehensive study of artificial intelligence (AI) tools implementation at University of Limerick. *Global Social Sciences Review, VIII*, 201-210.
[12] Lim, W. M., Gunasekara, A., Pallant, J. L., Pallant, J. I., & Pechenkina, E. (2023). Generative AI and the future of education: Ragnarök or reformation? A paradoxical perspective from management educators. *The International Journal of Management Education, 21*(2), 100790.
[13] Moonen, J. (1989). Involvement and information: Fifteen challenges for computers in education. *Educational Technology, 29*(12), 7-11.
[14] Rodway, P., & Schepman, A. (2023). The impact of adopting AI educational technologies on projected course satisfaction in university students. *Computers and Education: Artificial Intelligence, 5*, 100150. https://doi.org/10.1016/j.caeai.2023.100150
[15] Rodrigues, R. (2020). Legal and human rights issues of AI: Gaps, challenges and vulnerabilities. *Journal Of Responsible Technology, 4*, 100005. https://doi.org/10.1016/j.jrt.2020.100005
[16] Universiteit van Amsterdam. (2018). Practicum Academische Vaardigheden IK. DataNose. Retrieved from https://datanose.nl/Course/Manual/69499/Practicum
[17] Vrije Universiteit Amsterdam. (2023a). Generative AI and ChatGPT: Your use, our expectations. Retrieved from https://vu.nl/en/student/examinations/generative-ai-your-use-our-expectations
[18] Vrije Universiteit Amsterdam. (2023b). AI en Onderwijs. Retrieved from https://vu.nl/nl/onderwijs/meer-over/onderwijs-en-ai
[19] Vrije Universiteit Amsterdam. (2023c). De AI Maturity in Education Scan (AIMES). Retrieved from https://vu.nl/nl/onderwijs/meer-over/de-ai-maturity-in-education-scan-aimes
[20] Xia, Q., Chiu, T. K. F., Zhou, X., Chai, C. S., & Cheng, M. (2023). Systematic literature review on opportunities, challenges, and future research recommendations of artificial intelligence in education. *Computers & Education: Artificial Intelligence, 4*, 100118. https://doi.org/10.1016/j.caeai.2022.100118
[21] Zhai, X., Chu, X., Chai, C. S., Jong, M. S. Y., Istenic, A., Spector, M., ... & Li, Y. (2021). A review of Artificial Intelligence (AI) in Education from 2010 to 2020. *Complexity, 2021*, 1-18. https://doi.org/10.1155/2021/8812542
[22] Zhang, K., & Aslan, A. (2021). AI technologies for education: Recent research future directions. *Data Science and Management, 2*, 100025. https://doi.org/10.1016/j.caeai.2021.100025

9 APPENDIX

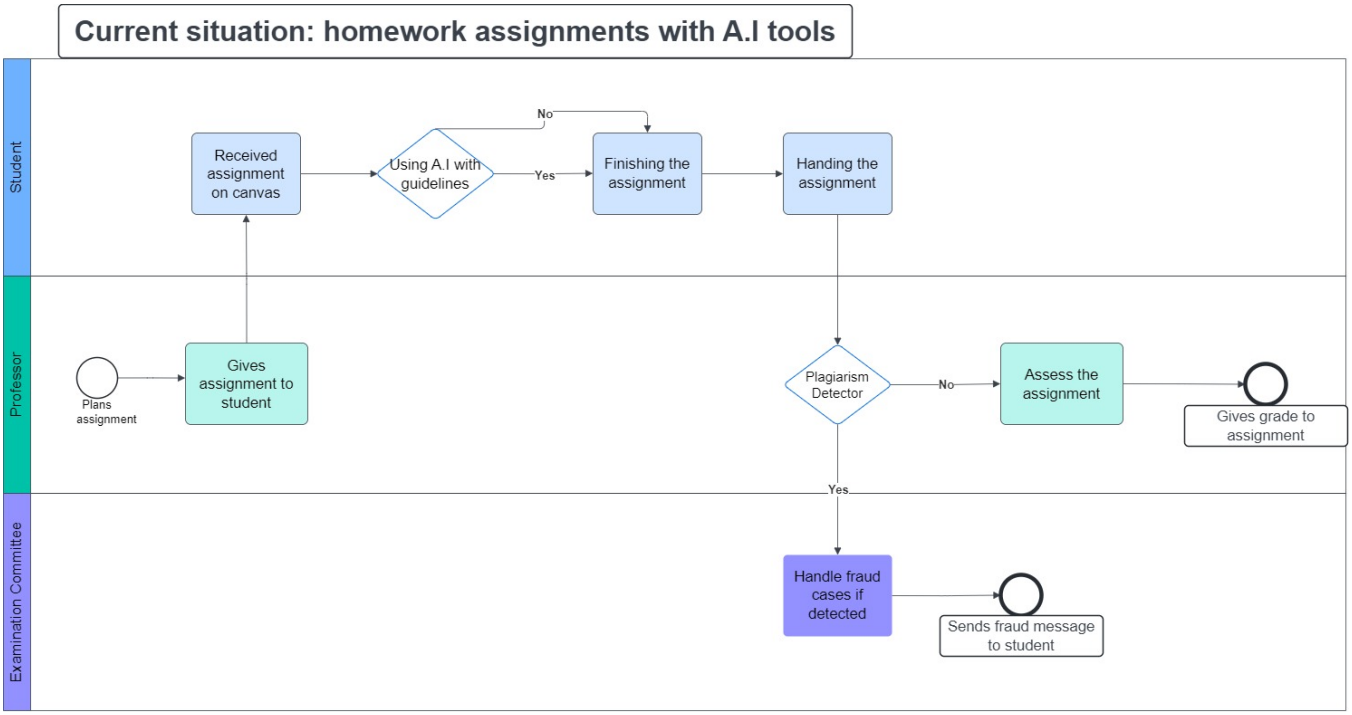

Figure 4: Current Situation Model: Homework Assignments with AI Tools

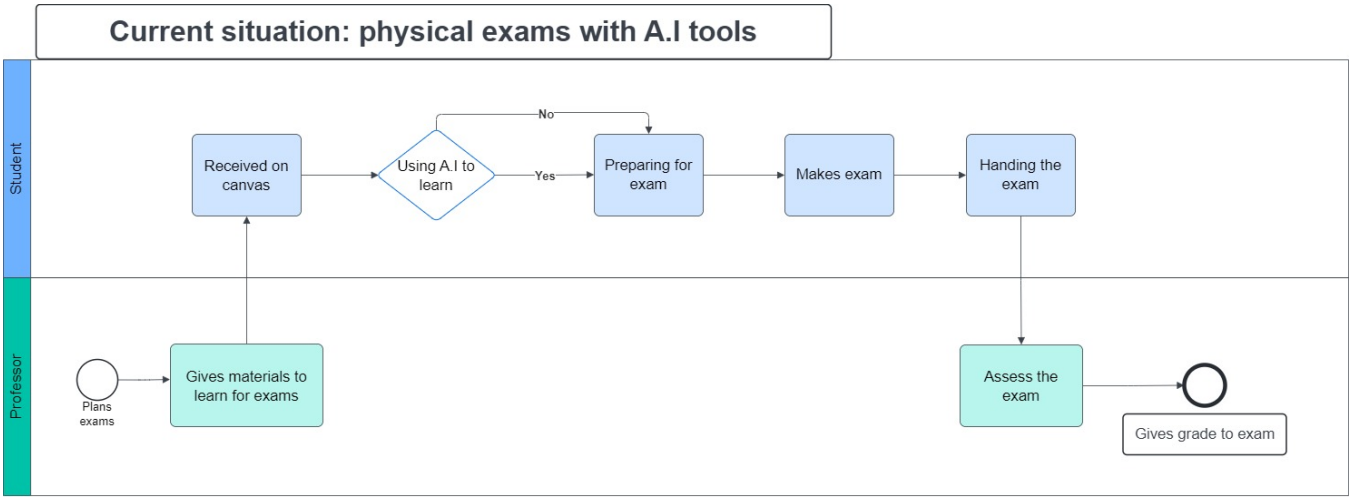

Figure 5: Ideal Situation Model: Homework Assignments with AI Tools

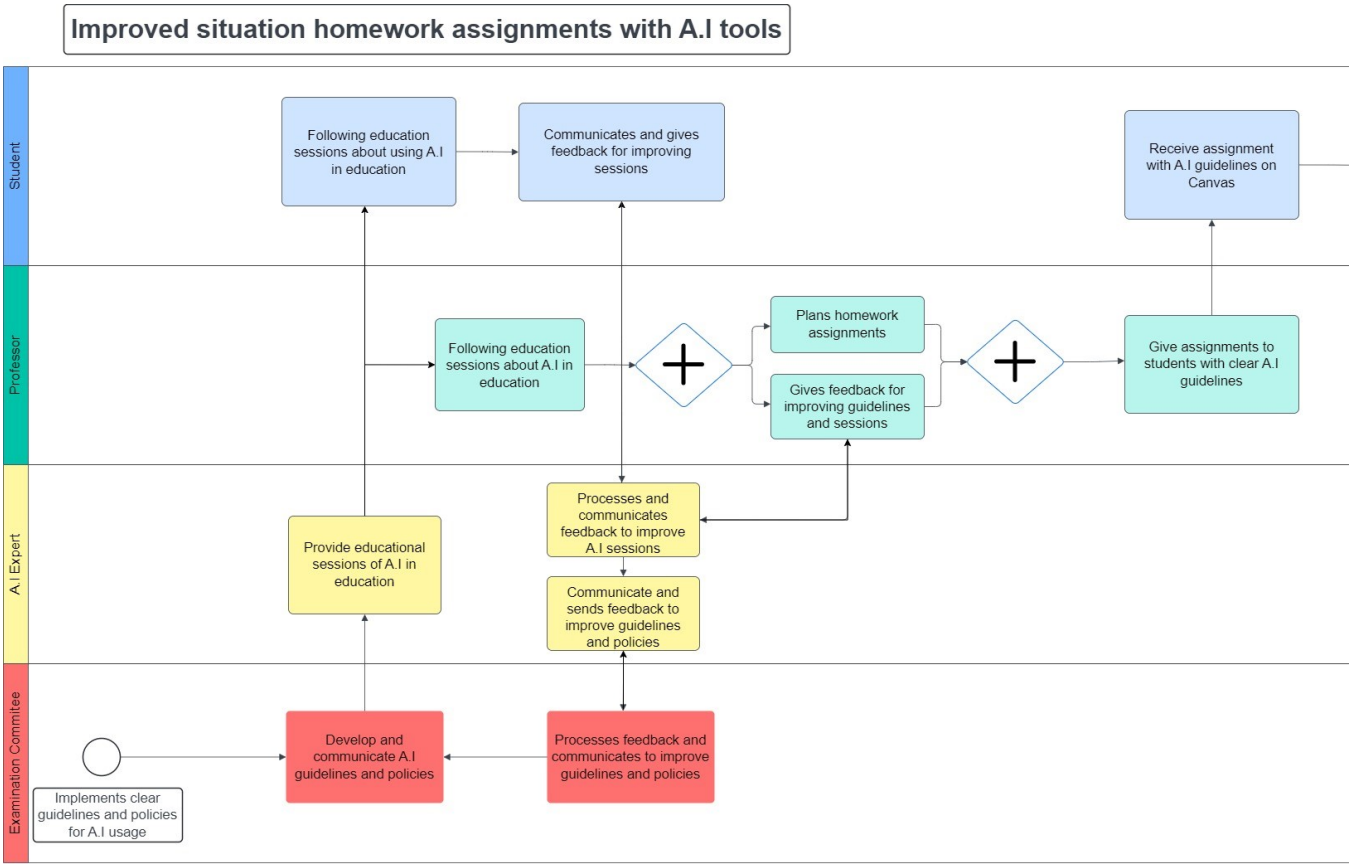

Figure 6: Ideal Situation Model: Homework Assignments with AI Tools (Part 1)

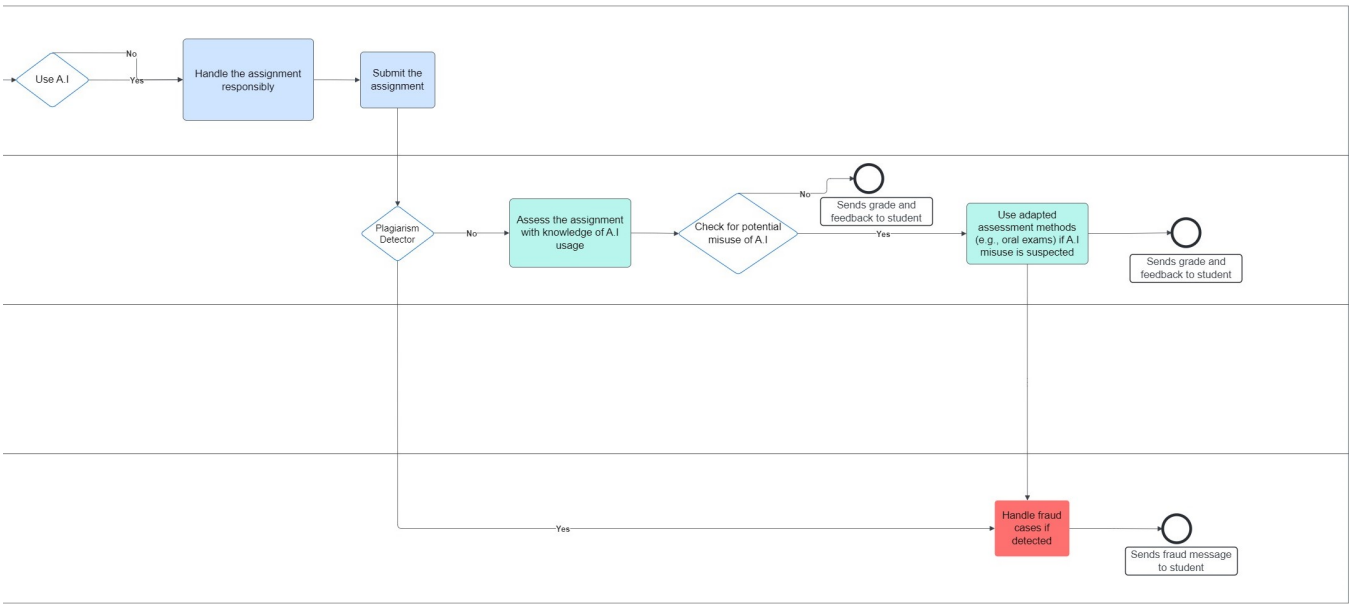

Figure 7: Ideal Situation Model: Homework Assignments with AI Tools (Part 2)

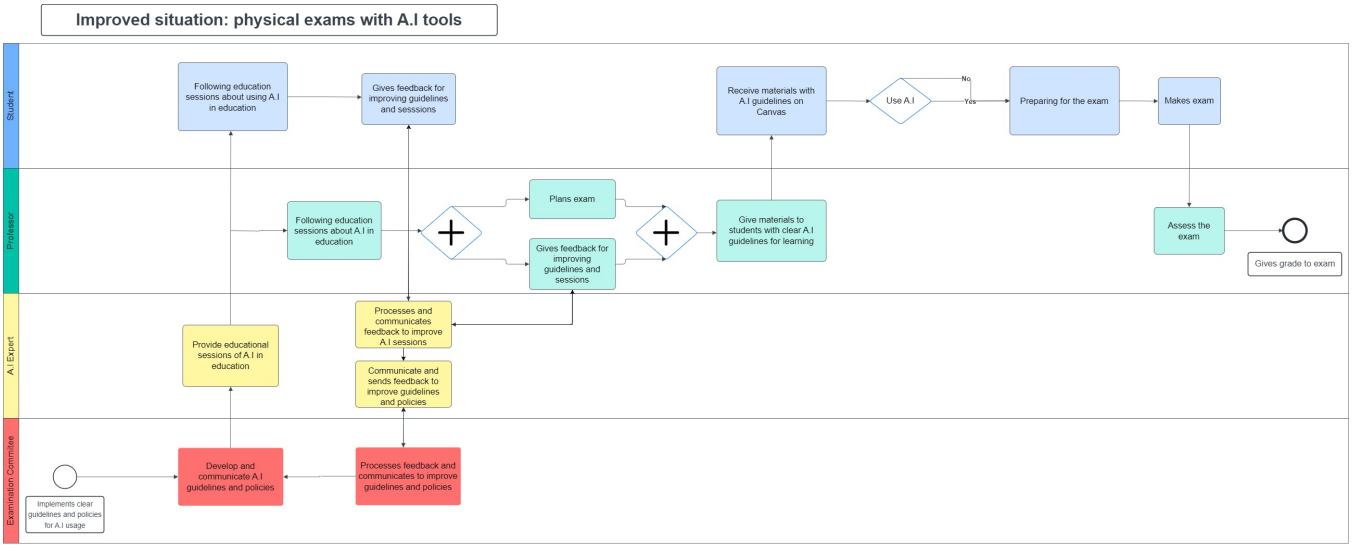

Figure 8: Ideal Situation Model: Physical Exams with AI Tools

Demographic and Background Information:

1. What is your major and year of study at the Faculty of Sciences?
2. Can you describe your prior experience with AI technologies before they were integrated into your courses?

Experience with AI in Education:

3. Can you list the AI tools you have encountered in your courses at VU?
4. How frequently do you use these AI technologies in your studies?

Perception and Impact of AI:

5. How do you feel AI technologies have impacted your learning experience?
6. What are the most significant benefits you have noticed from using AI in your studies?
7. Have you faced any challenges or issues while using AI tools in your education? Can you describe these?

Ethical and Privacy Concerns:

8. Are you concerned about your data privacy in the context of AI usage in education? Why or why not?
9. Have you been informed about how your data is used by AI tools in your courses?

Influence on Academic Practices:

10. In your opinion, has AI technology affected the way you or your peers study or complete assignments?
11. Have there been instances where you felt AI tools could potentially encourage dishonest academic practices?

Figure 9: Interview: Topic list for student

Background Information:

1. What is your role at Vrije Universiteit and how long have you been in this position?
2. Can you describe your involvement with AI and its integration into educational practices at VU?

Observations and Insights:

3. From your perspective, what are the main benefits of AI in education at VU?
4. What challenges have you encountered in the adoption and integration of AI tools?
5. Do you consider the students' perception of AI usage? Results such as students embracing AI, varying usage of AI, and different perceptions among students and faculty.

Ethical and Administrative Considerations:

6. How do you address concerns related to data privacy and ethical issues surrounding AI usage?
7. Is there any policy in place to manage these concerns? Can you elaborate further?

Impact on Teaching and Learning:

8. What is your view on the impact of AI tools on both students' learning outcomes and learning styles?

Academic Integrity and Fairness:

9. What are your thoughts on developing a university-wide policy framework for AI integration? Which elements do you believe should be included to ensure it aligns with our educational goals and societal values?

Future Perspectives and Suggestions:

10. How do you see the future of education in light of rapid advancements in AI technology? Do you think traditional teaching methods will persist, or do you expect them to be fundamentally changed by AI? Or perhaps, do you think education as a whole might no longer exist?

Figure 10: Interview: Topic list for staff member